Shamak Dutta

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🖥 http://shamak.github.io

Education

2017–now   **Masters in Systems Design Engineering**, *University of Waterloo*, Canada.
Advisors: Graham Taylor & Bryan Tripp
International Master's Student Award ($12,270 CAD)
Vector Institute Research Award ($4,000 CAD)

2012–2017   **Bachelors in Computer Engineering**, *University of Waterloo*, Canada.
Engineering International Student Scholarship ($20,000 CAD)
President's Scholarship of Distinction ($2000 CAD)
President's Research Award ($1500 CAD)
GPA – 3.7/4.0, Graduated with Distinction

Publications

2018   **Convolutional Neural Networks Regularized by Correlated Noise**.
S. Dutta, B. Tripp, G. Taylor
CRV, 2018

2016   **Barcodes for Medical Image Retrieval Using Autoencoded Radon Transform**.
H. Tizhoosh, C. Mitcheltree, S. Zhu, and **S. Dutta**
ICPR, 2016

Research Experience

Summer 2018   **Research Intern**, *Preferred Networks*, Tokyo, Japan.
Advisors: Shunta Saito & Masaki Saito
Worked on stochastic conditional video prediction using generative models.

Summer 2017   **Research Intern**, *Morpheus Labs*, Oxford, United Kingdom.
Advisors: Joao Messias & Shimon Whiteson
Worked on 2D-3D human pose reconstruction from a single frame. Involved estimating the camera pose using 3D-2D correspondences and iterative refinement using particle filters. Used a neural net to estimate the 3D pose, given a 2D pose. Learning was guided by the reconstruction loss of the produced 3D pose in 2D and a discriminator loss. Also implemented Deep Q-Learning on the cartpole task from OpenAI gym using an in-house reinforcement learning framework.

Fall 2016   **Research Intern**, *A9.com*, Palo Alto, USA.
Advisor: Erick Cantu-Paz
Part of the Amazon Search Ranking team. Implemented a tweaked version of Deep Structured Semantic Model (Huang et al, 2015) to generate word embeddings, given a query or product title. The embeddings are used to calculate similarity scores to determine relevancy between products and search queries. Prototyped an approximation of the Amazon ranking metric using fully-connected neural nets which achieved competitive accuracy. Gave a tutorial on implementing character-level recurrent neural networks in TensorFlow to 30 people.

Summer 2016	**Undergraduate Research**, *Adaptive Systems Lab*, University of Waterloo, Canada. Advisor: Dana Kulic Analysed the use of recurrent neural networks to achieve behaviour cloning of human motion on the HDM05 Motion Capture dataset. Work was done as part of ECE 499 (Independent Research Project). Wrote a final report on my experiments and results; grade: 90/100.
Summer 2016	**Undergraduate Research**, University of Waterloo, Canada. Advisor: Stephen Smith Worked on the Generalised Travelling Salesman Problem with overlapping sets. Implemented a solver in Julia, based on large-scale adaptive neighbourhood search using various heuristics.
Fall 2015	**Undergraduate Research**, *KIMIA Lab*, University of Waterloo, Canada. Advisor: Hamid Tizhoosh Analysed the use of the hidden representations of deep autoencoders trained on the Radon transforms of medical images as image descriptors. Hidden representations are converted to binary barcodes, which are used in high-performance search and retrieval. Co-author on a paper accepted at ICPR, 2016.

Work Experience

Summer 2018	**Research Intern**, *Preferred Networks*, Tokyo, Japan.
Summer 2017	**Research Intern**, *Morpheus Labs*, Oxford, UK.
Fall 2016	**Research Intern**, *A9.com*, Palo Alto, USA.
Winter 2016	**Software Engineer Intern**, *A9.com*, Palo Alto, USA.
Summer 2015	**Software Engineer Intern**, *Lookout Security*, San Francisco, USA.
Fall 2014	**Software Engineer Intern**, *Avvasi*, Waterloo, Canada.
Winter 2014	**Software Engineer Intern**, *Achievers Inc.*, Toronto, Canada.
Summer 2013	**Software Engineer Intern**, *pVelocity*, Toronto, Canada.

Courses taken (for credit or audit)

UW (Masters): Convex Optimization, Computational Neuroscience
UW (Bachelors): Machine Learning, Pattern Recognition, Quantum Mechanics, Probability Theory, Robotics & Control, Adaptive Algorithms, Networks, Analog Communications, Analog Control, Compilers, Embedded Systems

Technical Skills

Languages: Python, Java, C++
Software: TensorFlow, Julia, Matlab, Hadoop, R, PyTorch, Theano